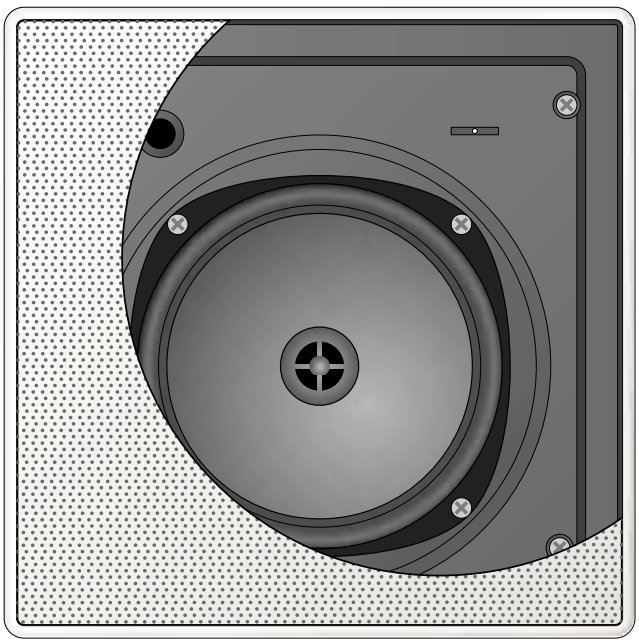
Russound

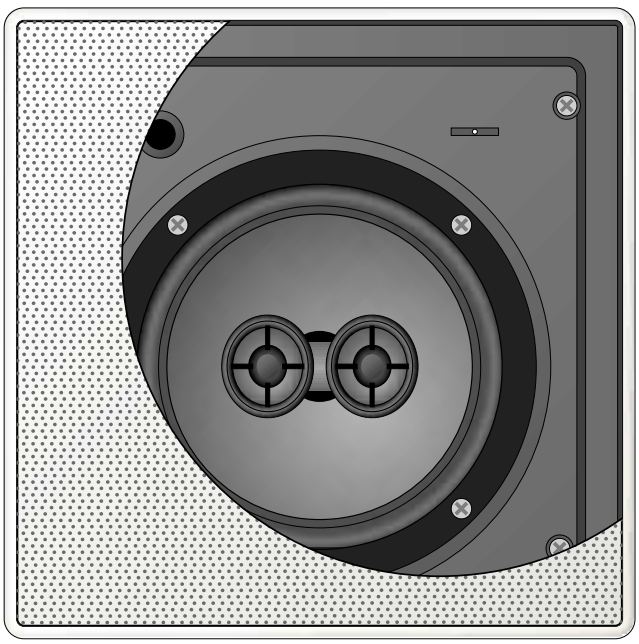
A/V DISTRIBUTION & CONTROL SYSTEMS

Instruction Manual

SP652.1



SP622.1



INTRODUCTION

Congratulations on selecting Russound Wall-Mounted Speakers. Like all RUSSOUND speakers, they combine acoustic technology with durability and will provide years of musical enjoyment.

This manual is designed to make your SP652.1 & SP622.1 speakers as easy to install as they are to listen to. If you've had any home "do-it-yourself" experience, you should find installation of your new speakers a simple job.

However, we suggest you read through this manual before starting out. If you then decide that installing your Russound In-Wall Speakers is beyond your skills, call your Russound dealer to arrange for professional installation.

NECESSARY TOOLS TO DO THE JOB

Tools for installation in existing walls:

- A pencil
- A drill with a 1-inch flat bit
- A retractable utility knife or keyhole saw
- A length of stiff wire about 3 feet long (a straightened wire coat hanger works fine)
- A Phillips-head screw driver which will fit the fastening-screws (for the dog ears)
- A pair of diagonal pliers or wire strippers

Some of the following may also be needed, depending on the application:

- A stud finder
- Drill bit just slightly larger than the diameter of one speaker wire
- Plumb bob or small weight on a string
- Insulated staples for securing speaker wire
- Masking tape
- Paint and applicator for changing grille and outer frame finish

SPEAKER WIRE

The amount of wire you're going to need will of course vary with speaker placement. We recommend labeling speaker wires left + right and room location. Doing this takes the guess work later.

What kind to use:

We recommend using Russound AW series speaker cable or any reputable brand of 16 to 12 gauge multi-stranded wiring for amplifier-to-speaker connections.

Selecting the proper gauge:

Wire is measured in "gauges". The bigger the number, the smaller the wire. For example, 18-gauge is thinner than 14-gauge.

The gauge of wire you need is determined by the distance between your amplifier/receiver and the in-wall speakers. Use the following chart as a guide:

Length	Minimum Gauge
10 to 100 ft.	16
80 to 125 ft.	14
Over 100 ft.	12

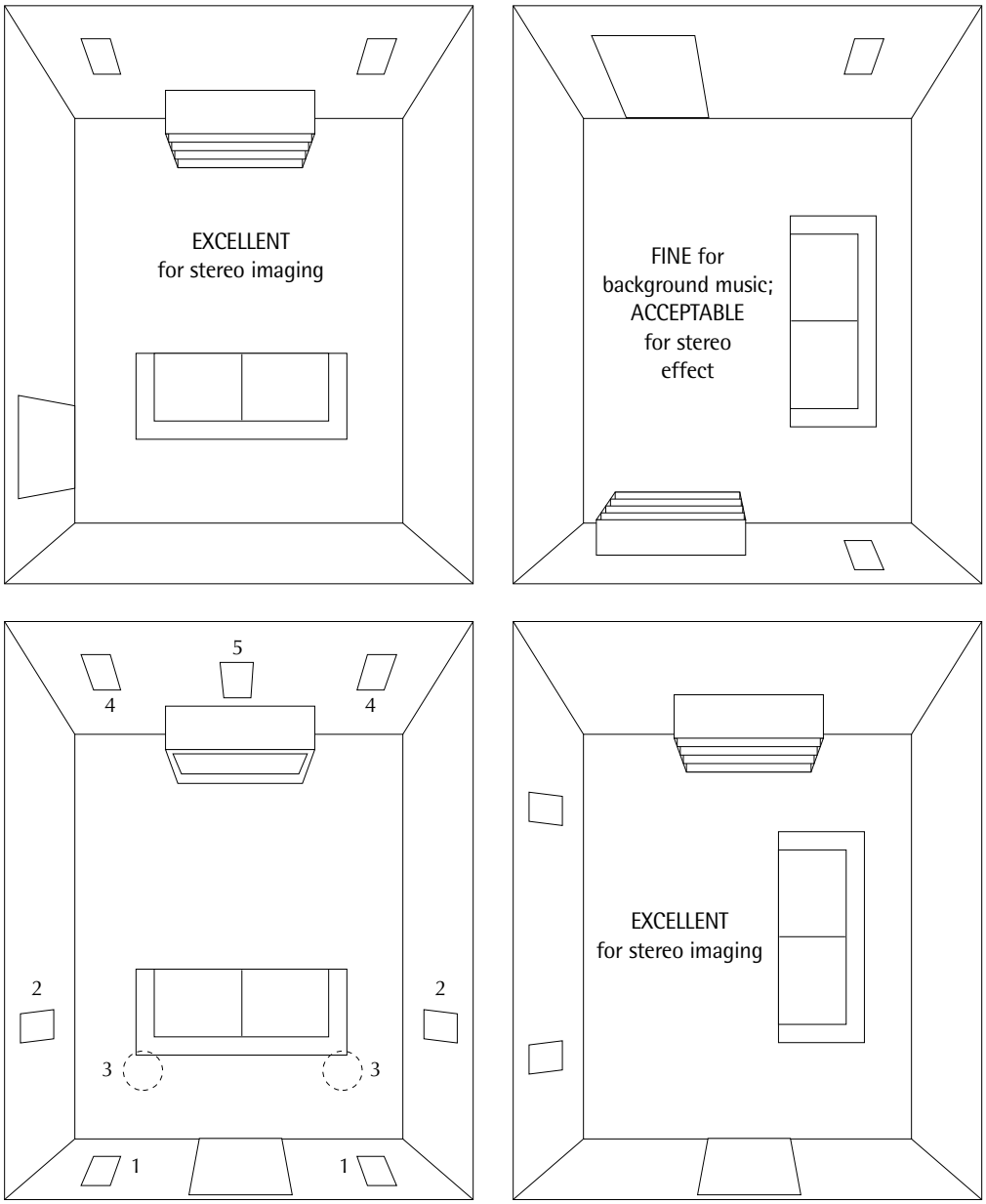
WHERE TO PLACE YOUR SPEAKERS

Placement can make all the difference in how your RUSSOUND speaker system sounds. There are at least three "WHERE's" and a "HOW" to factor into your layout:

- HOW you intend to use your in-wall speakers
- WHERE they'll sound best (stereo imaging and acoustic considerations)
- WHERE it's possible to install them (wall and ceiling surfaces)
- WHERE they can be installed that makes it easy to get wires to them without remodeling your entire house.

STEREO IMAGING

If your Russound In-wall Speakers are going to be your primary listening source in a room, you need to consider some other factors to insure proper imaging. The term "stereo imaging" refers to a speaker system's ability to project music so that it sounds like the performers are in a 3-dimensional space between the speakers. It's the whole point of having a stereo instead of monophonic sound.



Drawing 1

Russound In-wall speakers may be used for rear surround sound channels by placing them (1) behind, (2) on each side of the viewing position or (3) in the ceiling just behind the viewers. The SP652.1 speaker also make excellent, unobtrusive front channel home theater speakers for 5 channel listening.

OTHER ACOUSTIC CONSIDERATIONS

For best fidelity, there are several other factors to keep in mind before you start actual installation.

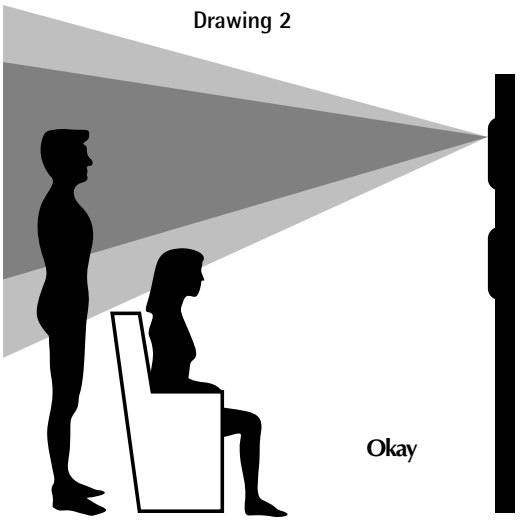
Concerns and reflections:

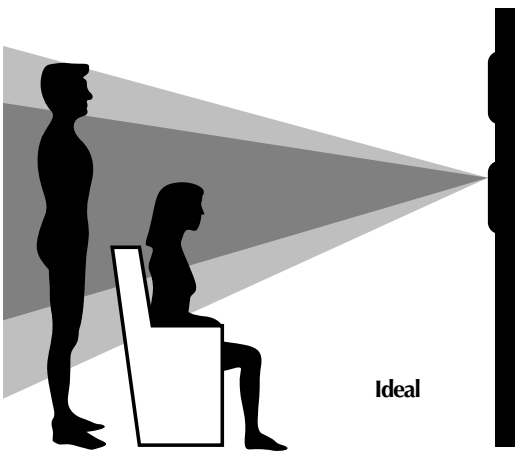
When an in-wall speaker is placed close to the corner of a room, bass frequencies are emphasized. This can be okay if both speakers are mounted near corners (while maintaining stereo imaging). But try to avoid placing just one speaker in a corner and another on a long flat wall.

Treble is emphasized when it reflects back from reflective surfaces such as large windows. Conversely, highs tend to be muffled by soft surfaces such as drapes, rugs, upholstered furniture, carpeted steps and even textured fabric wall paper.

In general, the best acoustic performance will result if both speakers face a similar type of surface and are placed in similar positions on the same type of wall.

Drawing 2





INSTALLATION DEPTH

Russound In-Wall speakers require at least 2-3/4" of wall depth (measured from the outside surface of the wall). This means that they can be installed in any wallboard and 2x4 stud wall. In fact, the **dense, rigid nature of plasterboard** or (lath and plaster in older homes) **acts as a superb speaker baffle.**

You can also install Russound speakers in stud walls covered with thick wood paneling or in wallboard/plaster ceilings.

However, avoid:

- T-bar "drop ceilings" with very thin fiberboard panels which can buzz and vibrate. If you suspect this will happen, reinforce the drop-in panel with wood or particle board.
- Any wall which can't provide proper depth (clearance) for the back of the Russound speaker. This includes brick or concrete walls where the wallboard or paneling is attached to thin furring strips.
- Inside wall space less than 10" wide and 48" in height
- Walls where you know that there are pipes, heating ducts and ESPECIALLY AC wiring in the general vicinity. For example, if there is an outlet along the baseboard, there is often a live wire running partly up the wall at that point.

SPEAKER WIRE PATHS

In general, you should pay particular attention to the following areas:

- Avoid running speaker wires close to house electrical wiring for any distance. If you have to run them parallel, make sure to space the speaker wires at least two feet from the AC line. It is, however, okay for speaker wires to cross paths with AC line or go through the same hole together with house wiring if they separate before and after.
- Make sure that the entire path between speakers and amplifier is clear and not obstructed by a floor or ceiling joist or masonry wall which you won't be able to drill through.
- Remember that the other end of the wires has to come out somewhere to connect with the amplifier. Confirm ahead of time that you can drill an outlet hole easily and in an un-obtrusive spot.

PAINTING THE SPEAKERS

If you like the designer white finish which has been applied to your Russound In-Wall Speakers, skip to the section "cutting holes". But if you want your speakers to completely blend in with a colored wall or accent the surface, now is the time to paint your Russound speakers' outer frames and perforated grilles.

The speaker's outer surfaces are primed to accept ordinary latex wall paint or aerosol spray paint. Because the surface behind the perforated grille should remain black, you will need to mask this area off before you begin painting or use the included template cover.

1. Remove the speaker grilles. From the back of the speaker, push the clamp (dog-ear) towards the grill to loosen it so you can pull it off.
2. Attach masking tape to the cardboard masking template which has been included with your speakers.
3. Press the template onto each speaker's surface to cover the woofer and tweeter.
4. Paint the outer speaker frame and grille separately. A roller with a short or medium nap will work much better than a brush. If you're using spray paint, make sure that you achieve the same coverage on both grille and frame.
5. After the paint has thoroughly dried, remove the template and/or masking tape.

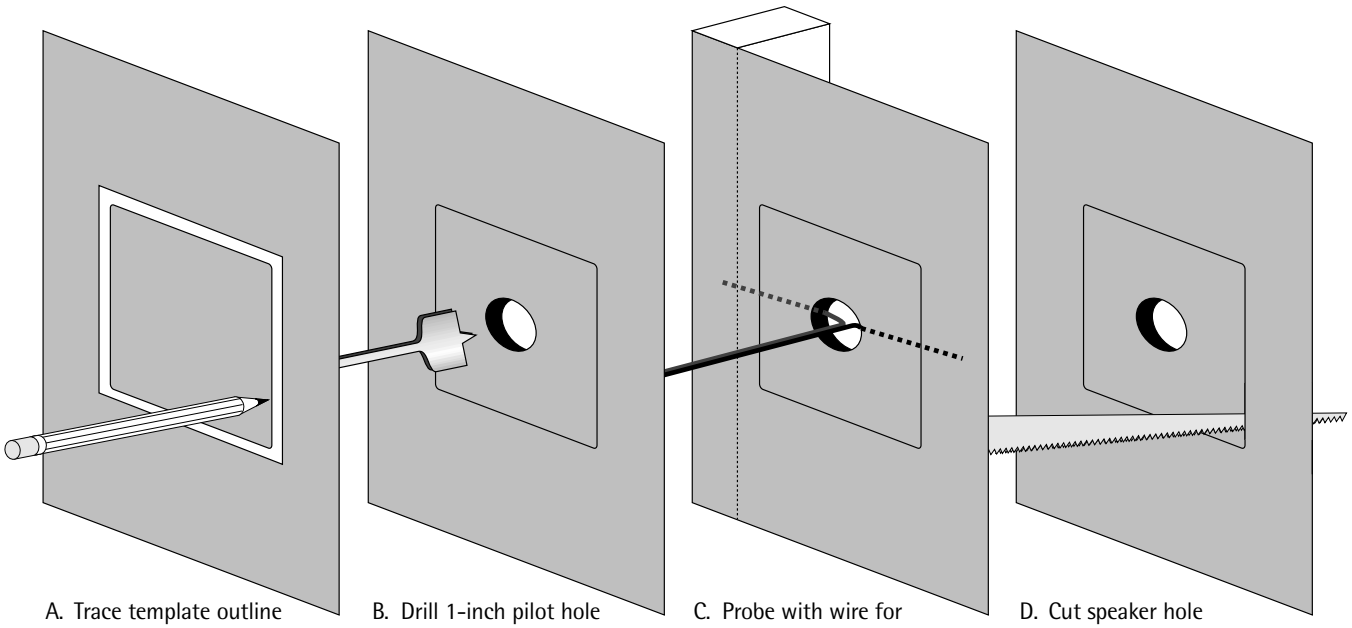
There's no need to replace the grill at this time since you will need access to the inner speaker surface during installation.

CUTTING HOLES FOR THE SPEAKERS

Wallboard is an easy surface in which to make a relatively neat hole. Make sure you don't make it any bigger than the template. In the following steps, you're going to locate a section of wall between two studs, mark the outer boundaries of the hole, drill a small hole in the center to confirm your location and then cut the main hole.

1. Determine the location of your wall studs so that the speaker can be approximately centered between them. There are several ways to go about this:
   * Tap on the wall and listen to the resulting "THUMP". When it's deeper, you're between studs. When it's sharper and more flat-sounding, you're close to a stud.
   * Use a stud-finder, a simple little magnetic device which works by locating the lines of nails hammered into the stud.
   * Identify studs by the position of electrical outlets or switches. There will be a stud either directly to the left or right of a an electrical fixture. This gives you a point of measurement since studs are either 18 or 16 inches apart in newer houses, 12 inches apart on older homes.
2. When you're reasonably sure of where the wall's 2x4 studs are (and are TOTALLY sure that there isn't an electrical cable, water pipe or heating duct in that vicinity of wall), position one of the cardboard mounting templates and draw around the inner outline with a pencil. If you don't trust your eye, use a level to make sure the hole will be straight.
3. Drill a 1-inch hole in the center of the pencil outline which you have just drawn.
4. Obtain a length of stiff wire such as an unwound, totally un-bent coat hanger. Bend it so that the last 12 inches is at a right angle to the rest.
5. Insert the angled part into the 1-inch hole you just drilled and probe to left and right to confirm that a stud is not close on either side.
   * If there is a close stud on one side, just re-position the cardboard template a few inches in the opposite direction and re-draw your pencil outline, keeping the 1-inch hole within the pencil outline's inner boundaries.
6. Score the outline of the template with a utility knife to prevent chipping or wall paper from tearing. Then use a keyhole/dry-wall saw to cut in the opening.
   * **If you're dealing with lath and plaster or thick paneling, you need to use a different technique. Drill 1-inch holes at the corners of the pencil outline. Then use a fine-toothed key-hole saw or even a hacksaw blade with VERY slow strokes to saw through and remove the inner surface.**
7. Temporarily place a Russound speaker into the cut-out to insure that it fits properly. It's okay if the hole is slightly large, since it will be covered by the speaker's outside frame. Actual installation will happen later, after you've routed the speaker wires.
8. Repeat steps 1 through 7 for the other speaker.
9. Now it's time to drill the hole on the OTHER end -at the point where the wires from the speakers will exit to the amplifier/receiver.
   * Use the same 1-inch drill bit as before.
   * If you want a custom look, install an outlet box against a stud and cover it with a single outlet plate which has one hole in the middle for the wires to exit from OR order from your Russound dealer a Russound Stereo pair Wall Plate Connector.

Drawing 3



A. Trace template outline
B. Drill 1-inch pilot hole
C. Probe with wire for stud clearance
D. Cut speaker hole along outline

HOOKING UP YOUR SPEAKERS

IDENTIFYING "+" AND "-"

You need to be able to discriminate between the two conductors of the speaker wire. If your wire has transparent insulation, this is easy: One conductor will be copper-colored and the other silver-colored. Generally, professionals denote the copper one as POSITIVE (+) and the silver one as NEGATIVE (-).

If you've used wire which has an opaque insulation, there are still differentiating markings. Examine the wire closely and look for:

1. A series of ribs or grooves on one conductor
2. A painted stripe or dotted line

*** Denote any of these as the POSITIVE (+) conductor for similar connections on both ends.**

NOTE: It is important that you label your wires left and right when you run them to eliminate future confusion.

AT THE SPEAKER END

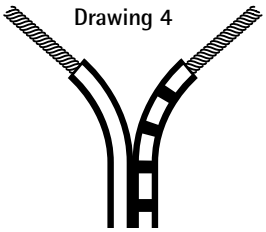
1. Cut off excess wire, leaving about 2 feet extending through the speaker cut-out hole.
2. Pull the conductors apart so they're separated for the first two inches from their ends.
3. Using a wire stripper, diagonal pliers or a knife, remove 1/2 inch of insulation from each conductor.
4. Twist the tiny strands in each conductor into tight spirals, as shown in Drawing 4.
5. IMPORTANT: Route the speaker wire THROUGH the sheetrock as shown in Drawing 5.
6. Attach the speaker wires to the red and black speaker terminals. Press down on the protruding levers while inserting the wire into the hole.
   * Correct the POSITIVE (+) conductor to the RED terminal and the NEGATIVE (-) conductor to the BLACK speaker terminal.
   * Make sure that no stray strands of wire have gotten detached and are touching the other main wire.
7. Repeat Steps 1 through 6 for the other Russound In-Wall Speaker.

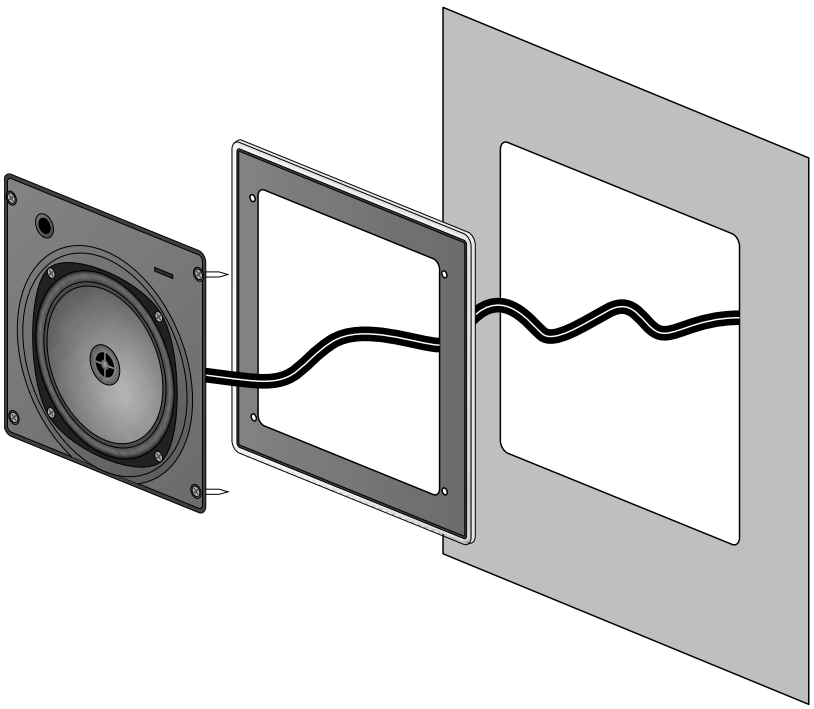
AT THE AMPLIFIER END

1. Cut off excess wire, leaving enough to comfortably reach from the hole in the wall to your stereo system. If there's a possibility that you're going to move the amplifier to another part of the room, consider leaving some excess wire coiled up. If you've used sufficiently thick wire, this extra length will not affect speaker performance and could make re-routing easier if the room is rearranged later.
2. Pull the conductors on both speaker wires apart so they're separated for the last two inches.
3. Using wire strippers, diagonal pliers or a knife, remove 1/2 inch of insulation from each conductor.
4. Twist the tiny strands in each conductor into tight spirals.
5. Attach the speaker wires to the red and black speaker terminals on the amplifier or receiver.
   * Connect the POSITIVE (+) conductor to the RED terminal and the NEGATIVE (-) conductor to the BLACK speaker terminal of the receiver/amplifier.
   * Make sure that no stray strands of wire have gotten detached and are touching the other main wire.

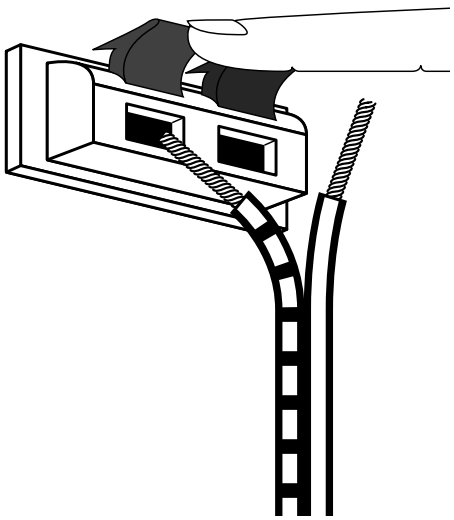
   Repeat Steps 1 through 5 for the other speaker.

Drawing 4





Drawing 5



FINAL ASSEMBLY

1. If you haven't done so already during painting, remove the perforated grilles from both Russound In-Wall Speakers. Use the clamp (dog-ear) to push the grille out from the back side.
2. Center the frame in the cut-out hole and tighten the screws until the clamps are drawn up snugly from behind, clamping the speaker in place. Try to tighten each screw equally but **do not over tighten.**
3. Place speaker baffle in frame and attach with supplied screws.
4. Insert the Russound speaker grille by gently pressing it into place.

In most installations, the grilles will fit tightly without causing vibration. If any audible vibration does occur, or if your Russound speakers are ceiling mounted, you finally get to use the contents of that mysterious packet with the black stuff wrapped in little white papers. They are pre-cut lengths of a special damping/adhesive material. Remove the perforated grille, unwrap four of the damping strips and affix them to the four outer corners of the inner speaker surface. Then replace the grille.

A QUICK LISTENING TEST

It's a good idea to test everything at this point. Also, although we've paid close attention to speaker polarity, we hope you labeled your wires to identify the left and right speakers.

1. Turn on your stereo system. Make sure that the VOLUME control is turned down and that the BALANCE control is set to center.
2. Activate a musical source such as FM or CD player.
3. Gently turn up the volume. You should hear music coming out of your new Russound In-Wall Speakers! **(If you don't, refer to the troubleshooting guide below.)**
4. Now rotate the stereo's BALANCE control all the way to the LEFT. Sound should only come out of your left in-wall speaker. If it comes out of the RIGHT speaker, skip to Step 6.
5. Rotate the BALANCE control all the way to the RIGHT. Sound should only come out of the right speaker.
6. If sound comes from the right speaker when the stereo's balance control is turned to the LEFT, you'll need to change the connections on the back of the amplifier/receiver.

* FIRST TURN OFF THE AMPLIFIER!

* Swap the wires attached to the left and right speaker terminals.

A QUICK TROUBLESHOOTING GUIDE

Before returning your Russound In-Wall Speakers for service, it is a good idea to check out these simple remedies first.

No sound from either speaker:

1. Incorrect source selected on receiver or preamplifier.
2. Mute button pressed on receiver.
3. Wrong speaker output selected; many receivers have an "A" and "B" speaker switch. Make sure it's in the right position.
4. In-Wall Volume control not turned up or wired incorrectly.
5. If using a "speaker selector", room/station not turned on or improperly connected

No sound from one speaker:

1. Un-secure connection at either the speaker or amplifier-double-check them.
2. Balance control turned all the way left or right-return it to center.
3. Bad connecting cable between sound source and amplifier - try a new cable.
4. Defective speaker - contact your Russound dealer or call our customer tech department at 603.659.5170.

* Any other problems not listed, discuss with your dealer or call Russound.

TAKING CARE OF YOUR NEW IN-WALL SPEAKERS

RUSSOUND In-Wall Speakers are designed to last the life of your home if you follow a few simple rules.

The main "killers" of any loudspeaker system are:

- too little power at high volumes
- too much power at high volumes
- transients (immediate loud passages, thumps, etc.)

Too little power:

It's a surprising fact but far more speakers are damaged by too little power than by too much! When an amplifier runs out of power while trying to re-create musical peaks, it causes a form of high frequency distortion called clipping. Clipping simply makes the music sound distorted. In greater quantities over a period of time, it can damage or destroy the tweeters (high frequency speakers) in any speaker system. If you like your music LOUD, consider getting an amplifier with at least 50 watts per channel.

Too much power:

There's nothing wrong with driving your Russound speakers with as much as 150 watts per channel—the extra power helps them achieve quick musical transients found in digital recordings. However, you must remember to restrain yourself and not get too heavy-handed with the volume control (or remote buttons). If the music begins to sound distorted or you hear a "clacking" sound during bass notes, back off on the volume! The clacking is caused by the woofer's voice coil trying to come out of its socket.

Transients:

Loud, deep THUMPS, caused when your system is turned on/off, or when the tonearm is dropped too hard on a record (if you still use those great classics), can seriously damage any loudspeaker including your Russound In-Wall models. Also remember to turn your system off before disconnecting any hook-up cables. When they're pulled out, a huge burst of low frequency hum often occurs if the system is still on.

MORE ON SPEAKER WIRES AND AMPLIFIER IMPEDANCE

Not all amplifiers or receivers can safely operate two sets of speakers at once. If you intend to use your Russound In-Wall Speakers at the same time as your main speakers or if you intend to hook up two pairs of speakers and use both at the same time, it's important to consider both the impedance of the speakers and the capabilities of the amplifier you're using. Russound makes a complete line of products from Impedance-Matching Volume Controls to Impedance-Matching Speaker Selectors. Ask you Russound dealer for details or simply write your request for a line catalog to Russound or FAX us at 603.659.5388

First, consult the owner's manual that came with the amp or receiver. It should tell you the minimum speaker impedance during simultaneous operation. On some models the manual will recommend that only two pairs of 8-ohm speakers be used at the same time. Others might allow one set of 8-ohm speakers and one set of 4-ohm impedance speakers. A few extremely powerful receivers and power amplifiers may even allow two sets of 4-ohm speakers.

If you can't readily determine this information, consult the dealer where you purchased the amplifier, or call the manufacturer of the product in question. Next, determine the impedance of your other speakers. It's often printed on the back of the enclosure near the connection terminals, or you can consult the speaker's owners manual.

If your other speakers are rated at 4-ohms, some amplifiers may experience difficulty driving both 4-ohm sets at once and shut off intermittently when the volume control is turned up. In this case, you should operate only one set of speakers at a time or keep the volume extremely low.

Another option is to purchase a speaker selector such as the Russound SS4 & SS6 series or a PRO series speaker selector. These are designed to maintain impedance control allowing your amplifier to work efficiently.

INSTALLATION DURING NEW CONSTRUCTION

Needless to say, installing In-Wall speakers when a house is being built is far easier than doing it later.

Russound offers a 'Speaker Rough-In Kit". The SB-3.6 Rough-In kit is designed to provide the drywall installers the cut-out for the In-Walls. The kit comes with two brackets, one for the left speaker and another for the right. The brackets are nailed/screwed onto the wall studs. Once the house/room is completed, you can install the speaker (more on this below).

During new installation, keep the following tips in mind:

- Use a small level to verify that the mounting frame is straight.
- The flat brackets and nails which attach the speakers are thin enough that they won't interfere with wallboard added later.
- If possible, run speaker wires after AC wiring is in place to avoid induced hum caused by close parallel proximity.
- Secure speaker wires in place along the run with insulated staples only and be careful not to pierce the insulation. Allow a bit of slack for expansion of building materials.
- The actual speakers should not be installed until the wall board is in place. In the meantime, leave several feet of wire coiled up and secured to the back side of the mounting frame.
- When it comes time to put up the dry wall, make sure the speaker cut-out hole doesn't extend farther than 1/4" from the sides of the mounting frame.
- After the wallboard is put up, install the speakers as detailed on **pages 5** of this manual.

Due to our continual efforts to improve product quality as new technology and techniques become available, Russound/FMP, Inc. reserves the right to revise speaker systems specifications without notice.

WARRANTY

All Russound Speaker products are fully guaranteed against all defects in materials and workmanship for five years from date of purchase. Proof of Receipt must accompany all claims. During the warranty period Russound will replace any defective part and correct any defect in workmanship without charge for either parts or labor. For this warranty to apply, the unit must be installed and used according to its written instructions. If necessary, repairs must be performed by Russound. The unit must be returned to Russound at the owner's expense and with prior written permission. Accidental damage and shipping damage are not considered defects, nor is damage resulting from abuse or from servicing performed by an agency or person not specifically authorized in writing by Russound. Damage to or destruction of components due to application of excessive power voids the warranty on those parts. In these cases repairs will be made on the basis of the retail value of the parts and labor. To return for repairs, the unit must be shipped to Russound at the owner's expense, along with a note explaining the nature of service required. Be sure to pack in a corrugated container with at least 3 inches of resilient material to protect the unit from damage in transit.

This Warranty Does Not Cover:

- Damage caused by abuse, accident, misuse, negligence, or improper operation (installation).
- Products that have been altered or modified.
- Any product whose identifying number or decal, serial #, etc. has been altered, defaced or removed.
- Normal wear and maintenance.

TECHNICAL SPECIFICATIONS

SP622.1

Frequency Response: 63-21,000Hz

Construction: 6.5" injection molded cone Dual voice coil woofer with rubber surround. Two 13mm mylar Dome tweeters

Sensitivity: 88dB

Min / Max Power: 10W/Ch / 70W/Ch

Impedance: 8 ohm

Frame Type: ABS plastic, paintable

Grille: Fine mesh grille, paintable (steel)

Mounting: 4 self-mounting, self-contained clamps

Dimensions: 10"W x 10"H x 3.125"D

Rough-In Bracket: SB-3.6

SP652.1

Frequency response: 58-21,000Hz

Construction: 6.5" injection molded cone woofer with cast basket and rubber surround. 13mm Uni-Axis mylar Dome tweeter.

Sensitivity: 88dB

Min / Max Power: 10W/Ch / 70W/Ch

Impedance: 8 ohm

Tweeter Level Switch: -3dB Flat +3dB

Frame Type: ABS plastic, paintable

Grille: Fine mesh grille, paintable (steel)

Mounting: 4 self-mounting, self-contained clamps

Dimensions: 10"W x 10"H x 3.125"D

Rough-In Bracket: SB-3.6

Russound
A/V DISTRIBUTION & CONTROL SYSTEMS
5 Forbes Rd. Newmarket, NH 03857, USA
603.659.5170 • Fax 603.659.5388
e-mail: tech@russound.com
Fax-On-Demand: 603.659.5590

Come visit us at:

www.russound.com